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Hart, John Hinchley

A botanist's ramble in Central America, or, A trip to the mainland

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A BOTANIST'S RAMBLE

IN

CENTRAL AMERICA;

OR,

A TRIP TO THE MAINLAND.

BY

J. H. HART,

SUPERINTENDENT OF THE GOVERNMENT CINCHONA PLANTATIONS, JAMAICA.

PRICE—SIXPENCE.

JAMAICA:
MORTIMER C. DESOUZA, PRINTER.
7, CHURCH STREET, KINGSTON.

1886.

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OCT 1 - 1912

A BOTANIST'S RAMBLE IN CENTRAL AMERICA;
OR,
A TRIP TO THE MAINLAND.

CHAPTER I.

Voyage from Jamaica—Appearances of Old Providence—Island of San Andreas —"Captains"—"Yankee Traders"—Trade of the Island—Cocoanuts—Currency—Cocoanut Diseases—Animal Life.

THE luxuriousness of the vegetation in many parts of Central America had been described by Belt and other travellers of a kindred nature to the author of "THE NATURALIST IN NICARAGUA" with such realistic vividness, that it offered an inducement to anyone interested in Botanical research to seize upon the first opportunity that presented itself to pay a visit to its shores, to see for himself the wonders of a truly tropical flora.

The opportunity having occurred to the writer, through the kind invitation of the Rev. Wm. Griffith to accompany him on a short missionary tour in and about the neighbourhood of the great Lagoon of Chiriqui, was at once accepted.

Having taken our passage on the Atlas stmr. *Arran*, which for some time past has been making regular trips to this coast, we set sail from Kingston, Jamaica, on Sunday, Nov. 8th, at 5 in the evening for our destination. We had not proceeded far down the harbour, however, before we were compelled to come to anchor, owing to a slight accident having happened to the machinery. This was repaired during the night, and at daylight we were under weigh, and after dipping our flag at Port Royal to H. M. Guardship, we made for the open sea through the southern channel. The concomitant disadvantages of a sea voyage usually observed among landsmen for the first day or two, were in this instance not particularly noticeable, for the weather was beautiful, and the sea as smooth as if the ship had been in harbour. This unusual calm was said on all sides by those accustomed to judge, to be too good to last, and though we have since heard that their judgment was quite correct, still, while we were on board the weather continued everything that could be desired.

Early on Wednesday the 11th, the island of Old Providence came dimly into sight on our starboard bow, presenting an outline in form somewhat the shape of a cottage loaf. This island, the scene of many futile expeditions in search of buried treasure supposed to be concealed in bygone years by Buccaneers, was gradually passed during the morning, and soon after lunch the island of San Andreas, or Saint Andrews, loomed in the dis-

tance. At 4 p.m. it was in full view, and the wreck of a large vessel lying on a surf-covered reef demonstrated the dangerous character of the approaches to the harbour for sailing vessels during stormy weather. At 6 p.m. we had passed the entrance and were snugly at anchor in the harbour. The deck of the steamer was soon crowded with Captains (all are Captains here) from various parts of the island, who had business with the Captain of the *Arran*. I was introduced to one who politely informed me that he "kept a shop." Two or three Captains of American vessels lying in the harbour also boarded us. I was informed that these gentlemen, otherwise ycleped "Yankee Traders" bring down cargoes consisting of groceries, hardware, crockery, glass, cotton and woollen goods, silks, and other articles of household economy, which they barter for the cocoanuts grown on the Island, in some instances staying for several months, doing a good retail trade with the Islanders. Capt. Brown of the *Arran* having invited us to a seat in his boat, we next morning paid a visit to the shore, landing at a place called "The Golf" in the midst of a handsome grove of cocoanuts, in fact wherever we had landed, it must have been the same, for the Island is truly an Island of Cocoanuts. We were introduced to one of the principal traders and entered his establishment, on one side of which were displayed his wares, and the other formed his "till," by which must be understood that the currency of the Island for the most part of consists of cocoanuts, and a portion of the building had to be set aside for their storage. The value of these at the time of our visit was from $25 to $30 per thousand.

I had made preparation for collecting, and in the short time available filled my vasculum, with numerous Herbarium specimens. The Flora of the Island, as was to be expected, resembled in general characters that of Jamaica. A few provision grounds were to be seen here and there between the splendid cocoanut groves which are *par-excellence* the mainstay of the Island. Fortunately for the growers, the many enemies to which this tree is subject in other lands, appear there to be almost entirely absent. The trees everywhere, although subjected to the apparently universal drought prevalent for the past few years in all the Caribbean Islands, were the picture of health and laden with nuts, the size of which in general did not appear to be larger than those grown in Jamaica, but they were decidedly heavier for their size. Many trees were bearing enormous crops, some of which were estimated to produce at one picking nearly a mule-cart load of ripe nuts.

No "borer" nor beetle is present I was informed, but on the northside the trees appear to suffer slightly from a fungus which

is probably a species of *Capnodium*, and in some places what is called "blight," caused by the attacks of minute scale insects, did some damage to the trees. In discussing the ravages of the "beetle" with a fellow-passenger hailing from the Mosquito Coast, he mentioned that the insect was highly prejudicial in his district, so much so that the cultivation was much restricted in consequence. From his description and sketch the particular insect which is so destructive, would appear to belong to the *Curculionidæ* or snouted beetles, the whole family of which are destructive to grain, fruit, and vegetable products in general.

Animal life was not abundant, except those belonging to the genus Sus. These porcine quadrupeds were everywhere, and appeared to thrive remarkably well. Not a single specimen of the "Railsplitter" type, as they are called in America was visible, a circumstance which is possibly accounted for by the abundance of food afforded by the coccanut. Charming little ponies, in splendid condition were fairly numerous and appear to be very useful in the transit of the staple product. Each rider when coming into the settlement uses two coarse nets, slung in pack saddle fashion behind him, for the purpose of carrying cocoanuts to be used in payment for goods purchased.

Many of the reefs, otherwise barren, are planted up with cocoanut trees, and yield their owners good crops, which are harvested at convenient times in fair weather, for in stormy weather they are unapproachable on account of the heavy seas. Some reefs lying far from land are also planted, which besides yielding a profitable crop, are of great service to navigators, as when so planted they can be seen at greater distances.

We left Saint Andrews shortly after 10 a. m. and then made for Bocas-del-Tora, which hove in sight early next morning.

Chapter II.

First View of Mountains on Mainland—Bocas-del-Drago—Old Bank—Providence Island—Character of Habitations—Weather—Temperature—Marine Organisms Abundant—Marianna Creek—Alligator—Cattle—Provision Grounds—"We We" Ant—Plantains—Bananas—Sarsaparilla—Varieties of Cacao—Process of Preparation—Quality of Prepared Chocolate—"Wariba" Wild Cacao.

In my last I should have said, sighted the land, for Bocas-del-Tora was yet some miles to the southward. We neared the coast rapidly, and the long ranges of majestic mountains on the mainland became clearly visible, one or two of the peaks being pointed out to us as being active Volcanos. From the chart we ascertained that one of these was 11,000 feet above sea level, and that several reached a height of 7,000 feet and over.

We entered the Lagoon of Chiriqui by a zig-zag course between an Island and a point of the Mainland through a passage

known to navigators as Bocas-del-Drago, or Mouth of the Dragon, but locally known as "Boque's Mouth." Once inside, a broad expanse of water was before us, almost deserving the term of inland sea; for certainly the term Lagoon, as it is generally understood is not an appropriate name for these waters. To our left was Columbus Island, and on the right at some distance was the large Island called "Coco Cay." For some ten miles a straight course was followed, when rounding a point of land with the helm "hard a starboard," we reached the anchorage opposite the settlement or town of Bocas-del-Tora. The town is situated as its name denotes, near the passage of the "Bull's Mouth." This consists of two entrances divided in the centre by "Careening Cay," which is a narrow slip of land supposed to represent the tongue of the bull. The left passage is impassable for all but small boats, while in the right there is sufficient water for the entrance of the largest ships. We were met here by members of Mr. Griffith's Church, and as there was no Customs' official to delay us, we had our traps transferred to a fine sailing boat and were soon speeding across the "Bull's Mouth" to the settlement of "Old Bank," situated at the north-end of Providence Island, which was to be our head-quarters for the time being.

On arrival we found that a house was set apart for the use of the Minister and his friend during their stay. This was a well erected wooden building, clean, well furnished, with polished floors, stained ceilings and papered walls, and was provided with many conveniences not to be looked for in houses belonging to the same class of people in Jamaica. It was to my mind distinct evidence in favour of the possibility of elevating in the social scale the classto which its owner belonged. Nor was it a solitary instance simply, for a large proportion of the houses in the settlement were of the same character.

The weather was fine, and the heat was not at all oppressive; in fact, it appeared to me that it was much cooler than in Kingston, which was probably owing to the sea breeze, for on consulting the thermometer we found that the night temperature ranged from 80 to 85 deg. Fahr.

It was arranged that we should pay a visit to the provision grounds of some members of the settlement early the next morning, and for that purpose a boat or "dug-out" capable of carrying eight persons was to hand soon after daylight. Some half-hour afterwards we were afloat, and, propelled by two paddles only, were soon gliding at a rapid rate down the Lagoon. There being no wind, the water was as clear as crystal, and at depths of 10 to 15 feet we could see the bottom which was covered with innumerable forms of marine organisms, to observe which af-

forded us constant amusement during the journey. An hour spent in this delightful occupation, brought us to "Mariana Creek." This was a channel about ten feet wide, which, at a short distance away was scarcely observable. It was covered with mangroves, and reminded one very forcibly of the descriptions by Mayne Reid of the hiding places of Indians, in some of the tales of our boyhood.

We had not proceeded far, however, before our olfactory nerves were considerably affected by the stench arising from a dead alligator, and all haste was made to pass this uninviting portion of the route. Further inland the creek narrowed somewhat and we passed through tracts of marshy lands covered with a luxuriant growth of the "Swamp Fern" ACROSTICHUM (CHRYSO) AUREUM, LINN. From the roots of a mangrove, some three feet above water, we collected plants of BRASSAVOLA NODOSA, LINDL. a fine white flowered orchid, which yielded such a delicate perfume as to effectually banish the thoughts of the dead alligator we had recently passed. At the landing place I observed a fine specimen of a coniferous tree (PINUS CUBENSIS?) On enquiry I found this had been brought from Bluefields, on the Mosquito Coast, and planted here by one of the settlers.

On leaving the landing place we proceeded for some distance on gradually rising ground, through some fine pasture land, a large tract of which was enclosed with fences constructed of barbed wire. Inside this enclosure were grazing a small herd of white and black-spotted cattle in splendid condition. They were small but beautifully proportioned, obtained—I learnt from our guides—from the "Valiente" Indians who live on the mainland.

Some half a mile onward we reached a cottage pleasantly situated on a knoll overlooking the sea, in the midst of a splendid grove of cocoanut trees. We rested here awhile and then made our way to the adjacent provision fields. Here were found plantains, bananas, pumpkins, cassava, sweet potatoes, yams, &c., growing in the greatest profusion. The only enemy they appeared to have to contend with being the "We-we," or Umbrella Ant. This insect—although very destructive it is true—did not appear to affect the general results of the cultivation—and the groves of Cacao on the outskirts of the field were in most instances untouched by it.

We found large colonies of this insect in every district we traversed and it is without doubt in a great measure due to the labours of these little creatures, assisted by the numerous land-crabs, that the probably once barren coral rocks which form the foundation of these islands, are raised from sea level to become

fertile fields adapted for the production of food for the human race. Enormous trees, from 50 to over 100 feet high, were commonly met with. Wishing to procure seed of one of these large trees, I expended several cartridges from a good fowling piece, in the endeavour to bring down a few seed pods, but fruitlessly, for the lower branches must have been at least 90 feet from the ground.

Plantains and bananas produce large bunches, which meet a ready sale on the spot, at the hands of Captains of trading schooners, running to and fro to the Isthmus of Panama. "Sarse," the roots of a species of Smilax known to commerce as "Sarsaparilla," also meets a ready sale, large quantities being grown at various places in the Lagoon, and not a little is produced and brought down by the Indians from the mainland.

The varieties of Cacao (Theobroma Cacao.) were numerous and may briefly be described as follows:—1st, green-skinned; 2nd, red-skinned; 3rd, yellow-skinned; 4th, white-skinned; and 5th, one we did not see, but described to us as a long tuberculated one, of very superior quality. The most commonly cultivated were the white and red-skinned varieties, but the green-skinned is a very heavy cropper and produces beans of excellent quality—pods of all these were collected and brought part of the way on our homeward journey, but a delay of some days in Colon resulted in their entire loss which was much to be regretted, as they would doubtless have proved fine additions to the varieties already under cultivation here. The beans produced are large in size, and of excellent quality which is proved by their selling on the spot to American traders at the rate of 25cts. per lb. (local currency.) The mode of preparation is simple in the extreme, and easily managed. The beans are first placed in a small covered vessel in the full sun, for two or three days to ferment, and are then washed and dried without the application of the "claying process" in any form.

Chocolate of good quality is manufactured locally. The beans are first roasted, then deprived of their skins and afterwards ground on a small flat porous stone, the crushing instrument, also of stone, being of a shape similar to a house-wife's rolling-pin. We had frequent opportunities for testing this preparation and often declared, that if travellers of the olden time tasted as good a mixture as it was our fortune to drink, it was no wonder that they described it as being "Food for the gods" which appellation, derived from Theos 'god' and Broma food; was the origin of the scientific generic name Theobroma.

Another distinct species of cacao was met with, which though of doubtful value as an economic plant, was of sufficient Botanical interest, to induce us to spare no pains to introduce it into this Island, in which endeavour I am glad to say we were primarily successful, as growing plants reached Kingston in safety, and are now contributed to the Castleton Botanical Garden, where with a congenial climate and under the care of the energetic Superintendent of that establishment, it is to be hoped they will furnish valuable material for future experiments. The plant has been scientifically determined, and proves to be THEOBROMA BICOLOR HUMB, AND BONPL. Its local names are "Tiger Cocoa," "Indian Chocolate" and "Wariba." The latter being the Indian name for the tree, which would appear to suggest some connection with the "Wari" or wild hog, of which large droves exist on the Mainland. The tree itself is of a stout spreading habit, its trunk and branches being much thicker than those of the ordinary kinds; but is not so erect in its mode of growth. It is cultivated and used—on a small scale only—by the Indians and Spanish half-breeds but is not esteemed by the "Creole" settlers on account of a peculiar flavour it is said to possess. It produces a much larger pod than the common cultivated kind, with a curiously netted and ribbed exterior shell, which consists principally of woody material, requiring a strong cutlass or saw to open. In the Cacao groves, we saw many trees of the ordinary kind reaching a height of over 40 feet, while the "Tiger Cocoa" seldom reaches more than 15 or 20 feet.

Several plants of a tree locally known as the "Wild Cocoa" were met with in the forest, and botanical specimens duly secured which proves the plant to be, not a *Cacao*, but a species belonging to the allied genus *Herrania*. The plant has but a small single stem, its leaves resembling at a short distance, those of the common Papaw (CARICA PAPAYA.) The pods are small, ten ribbed, with roundish seeds, covered with a thick sweetish pulp and is much sought after as a "bush" delicacy by the juvenile members of the community, but at present it does not appear to possess any better recommendation, though as an ornamental plant it would be deserving a place in any tropical garden.

Chapter III.

Orchids—Aroids—Ferns—The Peach Palm (Guilielma speciosa) Confirmation of Humboldt's observation on—Keeping qualities of the Fruit—Distribution of Jamaica Plants—Browning's Platyscopic Lens—Labor Question—Palms—The "Arpõo"—The "Raawa" Aërial Roots of—Character of Coast Rocks, &c.—Whip Snake—Blunt Instruments used to destroy Snakes—Bocas-del-Toro—Brassavola Nodosa—"Indian Ink."

The most plentiful orchid met with in our wanderings, was Catasetum tridentatum, Hook. There were numerous other species, but as the generality of them were not in flower, they were not so attractive as they would probably be at other seasons. The Aroidæ were very abundant, and covered the trunks of trees to the very top, one of these particularly noticeable on account of the bright scarlet colour of its spadix, though situated at a height of 50 feet from the ground, was soon brought down by one of our guides, who easily reached it by help of one of the numerous "liana's" which surrounded the trunk.

Several Carludovica's also attracted attention especially a small climbing one, with deeply 2-fid leaves, and also one of larger growth, they are probably C. gracilis, Liebm. and C. latifolia, R. P.,—Carludovica Plumierii, kth. the "Epiappa" of Jamaica was also abundant.

Ferns were plentiful, though the genera and species represented were few. One of the handsomest was Lygodium digitatum, Eat, a graceful climbing fern which hung from the trees in immense festoons in many places. Several Polypodium's, Adiantum's, and Trichomanes were found, among the latter the curiously proliferous T. elegans, which was met with in large quantities in deep shady woods and in several localities. Lindsaya quadrangularis, Dry, a fern indigenous to Jamaica, but rarely found, was met with on our trip in one instance only. On our return from the morning's outing we examined the locality around the settlement in which we were residing and found that little cultivation was attempted near the dwellings, but that groves of Cacao and cocoanuts abounded everywhere, while many of the inhabitants took great pride in showing me their "Soopa" trees. This is a palm well known under the name of of Giulielma speciosa, mart., but now referred by the authors of the Genera Plantarum to the genus Bactris. Wallace in his "Palms of the Amazon" thus describes it. "This most picturesque and elegant Palm has the stem slender, cylindrical, and thickly set with long needle-shaped spines disposed in rings or bands. It reaches sixty feet in height, and grows quite erect, though in exposed situations it becomes curved and waving. The leaves are very numerous, terminal, pinnate and drooping, forming a nearly spherical crown to the stem; and the leaflets growing out of

the midrib in various directions and being themselves curled and waved, give the whole mass of foliage a singularly plumy appearance." "The fruit is the size of an apricot, of a triangular oval shape and fine reddish-yellow colour. In most instances the seed is abortive, the whole fruit being a farinaceous mass."

"This Palm appears to be indigenous to the countries near the Andes. On the Amazon and Rio Negro, it is never found wild. It is mentioned by Humbolt's as having a smooth polished stem, which is a mistake." With this last conclusion of the clever author of the above quotations I am compelled to disagree as I found numerous trees of the smooth-stemmed variety growing in the same district, thus confirming Humbolt's observation. Though producing fruit identical with each other, there is a difference in the character of the foliage, which would by some be considered of sufficient importance, to warrant a specific distinction being made. The Palm according to Humbolt, was known to the Venezuelan Indians under the name of Pirijao." It is most commonly known as the "Peach Palm" from the similarity of its fruit, in size and colour to some species of the genus Amygdalus, to which the almond, peach and nectarine belong. The fruits are eaten either boiled or roasted and have a flavour—to our taste—combining that of roasted Spanish chestnut and sweet potato. As they were said to be very wholesome I ate several, and though I found them very satisfying on account of the quantity of starch they contained, yet nevertheless their flavour was keenly enjoyed. They are said by WALLACE in the aforementioned work to be "also ground up into flour and made into cakes which are roasted like cassava bread; or the meal is fermented in water and forms a subacid creamy liquid. Parrots, Macaws and Monkeys eat them greedily, but the latter gentry in wild state are prevented from obtaining them by the prickly nature of the stem," though this fact would not apply to the non-aculeated variety and possibly accounts for its greater scarcity. The trees were growing at sea level, and as the temperature is similar, I believe it would be an excellent plant to introduce for growing on the plains of Jamaica, especially in such districts as Black River and the plains of St. Elizabeth. Only a few seeds were obtainable and these have been carefully placed under suitable conditions for germination, but in the season, large quantities could be procured. As an article of food, it would certainly be a valuable plant to the poorer inhabitants of this Island, provided they could be induced to overcome their invariable prejudice against "Buckra tings." The fruit will stand transport with great facility when ripe. I had a single one which I kept

for some 25 days, and then it was found in a comparatively sound condition on my arrival in Jamaica. They are often carried as Produce to Colon where they meet with a ready sale.

Returning to our quarters in the evening we distributed among the people, a set of Economic plants we had brought with us from Jamaica. The most desired appeared to be Nutmegs, Pimento, and Mangoes of the No. 11 variety, only a few of the coarser kinds of the latter fruit being under cultivation. The Mango is a favourite object of attack with the "We-We" or Umbrella Ant and special means have to be taken to guard the trees from their attacks. One of the most efficient methods, appeared to be that of forming a tin trough around the tree, which was filled to a depth of two or three inches with coal tar; and this plan was also adopted to preserve the dwelling houses from the attacks of wood ants, by placing the same kind of trough around the piles, on which the majority of the houses were constructed.

The people were very eager to obtain notes as to cultivation in regard to the plants distributed, as well as those in common cultivation, and being asked to do so, I treated them to a short exposition on the first principles of Horticulture, during which considerable wonder was excited by showing them the different parts of a plant, as seen through Browning's Platyscopic lens, an indispensable article of outfit to the Naturalist and Botanist in any part of the world.

The next day we visited other provision grounds situated in a different direction, but found them similar in general appearance to those mentioned. On enquiry into the question of labour, it appeared that it was of a somewhat intermittent character. The heavier duties being performed by the Spanish and Indian portion of the population. The rate for ordinary Creole labour was 75 cents. per day and the others lower in proportion—the residents of African descent thus being entirely masters of the situation.

We met with several groups of large and highly ornamental palms; that locally known as the "Arpoo" which I take to be a species of Iriartea being very plentiful, as was also the "Raawa," Socratea *(Iriartea)* Exhoriza, Mart.

The stem of the former plant possesses a hardened exterior which is about one and a half inches in thickness, very solid, and straight in the grain. It is utilized for making rods, used in striking the hawks-bill turtle; an occupation which affords to the inhabitants a means of emolument by no means to be despised seeing that the tortoise-shell sells at the rate of $4 per lb. on the spot.

The rods are made of various lengths according to the preference or skill, of the individual who uses them. A long and heavy rod in the hands of a skilful man is usually considered the most destructive, but the average length may I think be put at about 10 feet. It has its largest diameter (1¼ inches) at about one-third of its length, and then gradually tapers to each end, at the base to about three-quarters of an inch, and at the top to a slender point. On the thickest end is placed a brass ferule, inside which is a small cavity for the reception of the barb or fang, an instrument laboriously made locally from large old three-cornered files. It is about six inches in length with an arrow-shaped head and two or three rows of barbs formed from the angles of the file at regular intervals. At the end nearest where it is fitted to the ferule is a collar, around which is bound a strong cotton cord, the thickness of a "Cod-line." This passes through a loop fixed to the staff at its centre, and the remaining length some 40-60 feet is neatly coiled down in the bows of the canoe. When a turtle is struck the barb pierces the shell, and the rod (detached by the force of the blow) acts as a float to indicate the direction the game has taken in its attempt to escape.

Turtle are taken by this method only when found basking in the sun on the surface of the water, the approach being made very carefully by canoes, using paddles as a means of progression; but they are also captured in large quantities by means of the nets made by the female portion of the community, the unmarried members of which are for a great part of the year occupied in this manufacture. The nets being let "on shares" to the turtle fishers, they form—for the makers—a very suitable means of obtaining a livelihood; in fact, almost the only means that is open to single women, other than cultivating provisions, which, however, is seldom attempted except by the poorest class.

The "Raawa" has a much thinner exterior than the "Arroo" and though sometimes used for the same purpose is not considered so serviceable, and is therefore relegated to the subordinate position of furnishing material for lathing and flooring of native huts on the provision grounds.

What strikes attention to this tree, and renders it peculiar is that the upper portion of each root is entirely above ground. They spring out of the stem, each successive one higher up the trunk than the last, and extend diagonally till they approach the surface, when they ramify into smaller rootlets and enter the ground. As fresh ones spring out from the stem, those which previously supported the tree rot, or die off in regular succession, thus leaving the entire trunk (often 60-80 feet in height) entirely supported by the concentric rings of outer roots, so that in old

trees a full grown man may stand erect beneath the bole. The aerial part of the roots are thickly covered with tubercular prickles—which is without doubt a provision of Nature for their defence against the attacks of herbivorus animals; it also serves the purpose of supplying the Indians with an efficient natural grater, which enables them to reduce their Cassava to a pulp.

Travelling over a considerable tract of country we reached the east side of the Island, or that exposed to the full force of the strong winds and currents so prevalent in the Caribbean seas. In the words of Mrs. Hemans,

> The breaking waves dashed high on a stern and rock-bound coast,
> And the woods against a stormy sky their giant branches tossed.

which was literally true also of the place on which we stood, as well as of that portion of the hemisphere farther north, on which the Pilgrim Fathers landed.

The rocks were very hard, heavy, of dark colour, composed of pebbles cemented together, forming what appeared to us to be—on superficial examination only—a ferruginous conglomerate. They were covered with marine mollusca, of many different species, and abounded with crabs of all sizes, which were sporting hither and thither over them, occasionally washed off by the spray from the breakers. Passing a bluff, on a steep ledge of rocks, our guide suddenly halted, and sang out in a loud tone of voice the single word—snake! On approaching the spot, he was found engaged in chasing a whip snake, which he soon killed by a blow with the back of the cutlass. I asked why he used the back instead of the edge of the weapon, and found that the people always used a blunt instrument when brought in contact with these reptiles, which was caused by a popular idea, that if the head of a venomous snake was severed from the body, the head itself retained a sufficiency of muscular power to effectually use its fangs. I preserved the body of this one and on making an incision in the abdomen to allow of the entry of the preservative fluid, I extracted from it the body of a small lizzard. In length the snake measured three feet nine inches, with a diameter of not more than half an inch. It has been, together with some pretty little tree frogs, presented to the Museum of the Jamaica Institute.

Approaching the "Bull's Mouth," (Bocas del Tora) on our homeward journey we turned a small headland, and found the rocks there, abounding with enormous quantities of *Brassavola nodosa*, LINDL., in full bloom; in fact, the rocks were literally white with the expanded flowers of this beautiful species. To cultivators of orchids, it will be a fact of no little interest to note,

that these plants were growing on hard, barren rocks, washed at times by sea-spray, and shaded only by the over-hanging cocoanut and other trees that were scattered along the beach. The same plant was also found making its home on the clean stems or roots of trees, but nowhere was it found in such luxuriousness as on this rocky headland.

There was seen near this spot a specimen of the same kind of tree, from which I had formerly tried to detach seed with the fowling piece; but though equally inaccessible, I was glad to find that it was in blossom and that some fairly perfect flowers had fallen to the ground. These were duly secured, and from even this scant material, the name of the tree has been determined. I learnt that it produced a dye or pigment used by the Indians for painting their faces, and it may therefore possibly prove of economic value. It is locally known as the "Indian Ink tree," but scientifically as *Genipa Americana, L.*

Chapter IV.

Journey to Jessy Town on the Wari-biarra River—Missionary Party—Size and character of Canoe—Thirty miles of open Sea—Crossing the Bar—The Wari-biarra—Raphia tædigera—Mon. Rothehild on the influence of Vegetation—Wallace's deseriation—Riley's Ranch—"Baboons"—Macaws—Toucans—Turkey Qualm (Penelope eristata)—Wild Cane—The Rapids—Indian Paint source of—Mission House—Pimento Palm—Dogs—Silk Grass.

A day or two afterwards we prepared for a journey into the interior, to a place called Jessy Town. This was a mission station, kept up and maintained solely by the local Methodist Free Church for the Indians living on the banks of, and in the neighbourhood of the Wari-biara or Wild Hog River.

A stock of provisions and the necessary camping material having been duly provided, we set sail accompanied by a Missionary party of four men and six women, whom, with Mr. Griffiths and the writer made up a complement of 12 persons. Our means of transit was a splendid canoe, beautifully built or rather "dug out" of cedar *(Cedrela odorata, L.)*. It measured 30 feet in length and 5 feet 6 inches in beam, having an added gunwale of some 8 inches, and strengthened with ribs at intervals of 18 inches. She was furnished with two masts, each of which carried a sail of triangular shape, and were fitted with light and portable booms, while to a short and stout bowsprit the gib was made fast. When close hauled she was a good sailer, but when before the wind she proved to be a regular "Deer-hound." We started with a fair wind at about 8 a. m. and made our way to the southward down the Lagoon, at mid-day landing at Salm-wood point on the south-west extremity of Pope's Island, where we stayed but a few minutes only for refreshment, as we

were anxious to make the mouth of the river before darkness set in. Getting under weigh again we had a fine and favourable breeze to assist us in making our way over an open stretch of some 30 miles of water. We encountered several squalls, and numerous others were seen in the distance, which made the sea very lumpy, and at times occasioned a dash of water over the side. We arrived off the bar at about 5 p.m. and found it covered with surf, only a very narrow channel of still water being observable, and on that also at times the rollers were breaking heavily. Our "Captain," however, having made necessary preparations and watching for a favourable opportunity, put his boat at it, the remainder of the crew meanwhile—standing by—prepared for eventualities. In a second or two, we were among the breakers, and our boat grounded or bumped slightly on the bar, when the crew immediately rose to their feet, and with all their force commenced poling to get over, ere a breaker should burst upon us. In this they were successful, and we had the satisfaction of seeing the next roller break too far away to do anything but assist us in clearing the shallows. We were now in smooth water, and in a few minutes afterwards we entered the mouth of the WARI-BIARRA.

On entrance into the river we found it a swift flowing stream some 50 yards in width, its banks on both sides completely covered with a majestic palm locally known as the "Silicoo." This tree is known to Botanists under the name of RAPHIA TÆDIGERA, Mart., and according to the authors of "Genera Plantarum" it is the only American species of the genus, the remaining five or six, which constitute all at present known, being natives of Tropical Africa and Madagascar.

Messrs. Bentham and Hooker give the following as the habitats of the genus:—

"Africa tropida et Madagascariæ incolæ et una Americana ab Amazonum ostia ad Nicaraguam extensa."

It is a handsome and noble tree and appears to exult in the swampy alluvial deposit which is a characteristic of the district for some miles inland. The large quantity of trees and their luxuriant growth without doubt, form one of the provisions of nature for rendering such tracts of country habitable for human beings, and probably exert in this their own home an equally beneficent influence on the hygiene of the neighbourhood, as do the Eucalyptus, and other trees of luxuriant growth, in situations where from the dampness of the locality their presence is required to absorb the superabundant moisture. In an elegant illustrated French work entitled "LES PALMIERS," edited by Mon. Roth-

child, the following comment is made on the beneficial influence exerted by members of the order Palmæ, both in arid as well as humid districts :—

"Si, dans les contrees tropicales marécageuses les palmiers favorisent l'assechement du sol, ils exercent aussi une bienfaisante, influence sur l'hygiene et la fertilitè des contreés desertiques, retardant l'evaporation trop rapide des eaux pluvials sous les rayons du soleil, et conservant ainsi plus longtemps au sol l'humidité necessaire à la culture.

"Gráce au voisinage des tailles de CHAMŒROPS HUMILIS, certaines terres arides pu étre utilement cultivees en Algeria et en Espagne."*

It will be seen therefore that not only is vegetable life generally beneficial, but that it exerts its influence for the well-being of man in more directions than one at the same time.

Wallace describes the RAPHIA as being one of the most striking of the noble palms which grow on the rich alluvium of the Amazon, and after noting its local name of "Jupati" he goes on to describe it in the following manner :—"Its comparatively short stem enables us fully to appreciate the enormous size of its leaves, which at the same time are remarkable for their elegant form. They rise vertically from the stem and bend out on every side in graceful curves forming a magnificient plume seventy feet in height and forty in diameter." The leaves alone of those we saw on the Warri-Biarra River were fully fifty feet in length and about six to eight in width, forming as Wallace says, "probably the largest sized leaf in the whole vegetable kingdom." The tree bears a fruit oval in outline, some three inches in length, and two in diameter, which is covered with regularly imbricated brown polished scales, making it look at first sight, more like the fruit of a coniferous tree than the seed of a palm. It forms a very pretty ornament for the drawing room table when fully ripe. For some two or three miles our route lay through the district on which these trees were growing, but ere we had reached their inland limit, we were overtaken by a perfect deluge of rain, which effectually put a stop to our observations for the evening. The storm continued for two or three hours during which we progressed but slowly, as we were now propelled by oars only, and the gathering darkness made our journey anything but a comfort-

* If in swampy tropical countries palms favor draining of the soil, they exercise too a beneficient influence upon the Hygiene, and the fertility of desert countries by retarding rapid evaporation of the rain water by the rays of the sun, conserving to the soil for a long time, the humidity necessary for cultivation.

Thanks to the vicinity of copses of Chamærops Humilis certain barren wastes have been profitably cultivated in Algeria and Spain.

able one. However, sometime after dark we arrived at "Riley's Ranch," a building situated on a banana plantation, and erected for the convenience and shelter of the labourers engaged thereon. We found this tenanted by numerous Indians and their dogs, but as it was large and fairly watertight, we soon set to work, slung hammocks, changed clothes, &c., &c., and after a few fine brew of steaming hot chocolate in addition to a substantial meal, we sought the arms of Morpheus. We were disturbed at intervals by the barking of the dogs, and the demoniacal howling of the "baboons" or monkeys* in the adjacent woods. These gentlemen were very plentiful, but it was certainly my wish that before I had made their acquaintance, they had been sufficiently EVOLUTIONIZED to devote the night to sleep, instead of maintaining their interminable orgies. The rain continued to pour in torrents all through the night, but at daylight next morning the sky was clear, and we again pursued our journey.

The river was now in high flood, which made it laborious work for the men at the oars, but steady progress was made, however, and the hours glided rapidly by, taken up as they were by observations on the many new and exciting objects which momently came into view. Several species of parrots were flying in large flocks in different directions, a noticeable feature in their flight being, that they were always in pairs flying side by side at a distance of one or two feet apart from each other. MACAWS were not common, though several were seen, but the yellow billed "Toucan" (RHAMPHASTUS, SP.) and a large black bird with yellow tail feathers, were very numerous. In passing a large level piece of ground on which the "Raawa," was very plentiful, we found that on the seeds of this tree there was a large number of birds feeding. These by their loud cries, were soon made out to be what was there known as the "Turkey Qualm." From notes and sketches taken afterwards, I believe this to be a species of PENELOPE, probably PENELOPE CRISTATA. It much resembles the curassow, CLOX GLOBICERA, and like that bird has a fine crest which it raises or depresses at pleasure. At a distance they were similar in appearance to a turkey and almost as large. Being described to us as excellent for food a stoppage was made for the purpose of attempting to secure a specimen or two. The river side, however, was very difficult, being covered for some yards by a floating growth of grass, PANICUM MYURUS, LAM., and on the banks with a strong growth of the wild cane, ARUNDO OCCIDENTALIS, SIEB., the necessary chopping to get through which, resulted in the sudden departure of our feathered friends. Another

*Possibly to be identified with *Mycetes Beelzebub*, or the preacher monkey—of Brazil and Guiana.

bird also described to us as being equally good for the table was of similar appearance to the last but much smaller. It is called the "*Coco qualm.*" Both these birds are, I think, mentioned by BELT in "The Naturalist in Nicaragua" as abounding in the districts which were the scene of the labours of that able and enthusiastic naturalist. Numerous other birds were seen, of all sizes and colours, in fact, to the sportsman or naturalist as well as to the Botanist there was plenty of material to occupy their undivided attention.

We had by this time approached the "The Rapids" which consisted of deep whirling eddies or pools interspersed with rocky and shingly shallow banks over which but little water was running. The deepest part of the shallows was always chosen for the passage, and the canoe had to be hauled over by ropes provided for the purpose. No sooner were we out of one difficulty than we were into another, the principal danger lying in sunken trees, which in the thick muddy water, caused by the previous day's downpour, were hard to detect. After passing the first of these, we again came into deep water, with rapids of various strength at intervals of one or two miles apart, but they were all passed successfully and we reached Jessy Town about noon. It was situated at a junction of two rivers, down which a number of Indians had come to meet us. These people were universally short in stature but very athletic and robust and appeared to us to be inoffensive, peaceable and docile, but it is possible we saw their best side only. Both men and women were painted on the cheeks in different patterns in which squares and diamonds predominated, done in red and black paint. On enquiry I found that they manufactured the black themselves from a fragrant kind of gum (extracted from one of the native trees) called "Pontapee" which appeared to resemble the GUM ELEMI of commerce. The special tree affording this latter product is a matter of considerable doubt. GRIESBACH describes it as the produce of a Dominican tree named DACRYODES HEXANDRA, GR., while other authors give it, as being obtained from AMYRIS BALSAMIFERA, L., and allied species. Of the genus DACRYODES, Benth and Hook, in Gen. Plant. say, "GENUS IMPERFECTE COGNITUM"; so that it would appear to be evident that at present little is known as to the tree or its product. If the gum should prove to be produced by any of the Jamaican trees, it will add another to the list of "minor products" which are in process of development, and if opportunity arises for inquiry into the subject, in the interest of cultivators generaliy it will not be lost sight of. There are three species of AMYRIS indigenous to Jamaica, while a fourth, native of Cuba and Trinidad, belongs also to the locality of which we write. The gum readily ignites and burns freely, producing quan-

tities of black smoke which deposit a very pure kind of lamp black, which is the substance used. Red ochre is purchased at the stores, by the Indians when they come down to the settlements to barter or trade for clothing and other necessaries, and forms the contrasting colour with which the face is ornamented. The colours are mixed with fat, and we were informed on the spot that the article most preferred was obtained from cockroaches. That abundance of these pests existed everywhere, and of a very large size we were well satisfied, but the statement as to the use of their fat, was taken—CUM GRANO SALIS.

The mission house was a large building constructed solely by the Indians for use of the mission parties who visit them regularly once a month, and was built solely from the products of the various palms so abundant in the neighbourhood. We took up our quarters therein and found it airy and comfortable. The Indian usually sleeps upon the ground, his bed being made of the leaves of a plant known as the "pimento palm," ACANTHORIZA ACULEATA. The leaves of this are fan-shaped and when tied two together in opposite positions they form an efficient shelter from the rain when walking, for which purpose they are used by the Indians, as well as for beds and thatching purposes.

Again the inevitable dog was present, and I witnessed a curious instance of the affection of these people for the canine race. They use, for carrying their children, goods and effects, strong nets made of the fibre from leaves of BROMELIA PITA, or silk grass—and on examining one of these bags hanging up near the kitchen I found, to my surprise, a litter of young pups about three or four days old, which had, I learnt, been brought by one of the boys a distance of several miles.

CHAPTER V.

Palms and Wild Plantains (Heliconiads)—Maize—Preparation of Maize called Bou-you—Curiosity of Indians at Photographic operations—Selaginellas—Contretemps in the River—Castilloa elastica—Superstitions and probable explanation—Penelope, description of—weight of—Flavour of.

Around the Mission House on all sides were growing large quantities of several species of dwarf palms, mostly belonging to the genera CHAMEDOREA and GEONOMA. Among the latter, was a very beautiful species with a thick plumose head. This was in fruit, and well matured seeds were duly secured for the Jamaica Gardens. There were also large quantities of several different *Heliconiads* and other Genera of the Order *Scitaminæ*. One of these locally known as "Waaha," struck our attention by the presence of a silvery glaucous tint on the underside of its leaves, which when swaying with the wind gave the plant a most peculiar appearance. It is nearly allied to a Jamaica plant,

HELICONIA BIHAI, L. (the wild Plantain) but it is probably a different species. Its leaves are used for thatching temporary dwellings, and for tying up the food of the Indians. Maize is grown as one of the principal food supplies. It is very prolific and ripens at several periods of the year. It is now and has been apparently from the most ancient times, the principal food of the inhabitants of Central America. On the coast of Peru, Darwin found heads of it* along with eighteen recent species of Marine shells, in a raised beach eighty-five feet above the level of the sea; and in the same country it has been found in tombs apparently more ancient than the times of the Incas.† "In Mexico it was known from the earliest time of which we have any record in the picture writings of the Toltecs, and that ancient people carried it with them in all their wanderings. In Central America the stone grinders with which they bruised it down are almost invariably found in the ancient graves, having been buried with the ashes of the dead as an indispensable article of outfit for another world." ‡ We did not disturb any places of sepulchre, but had the good fortune to find IN SITU, a similar stone to those spoken of in the above quotation in a clump of bush during the earlier part of our journey. The method of bruising the maize spoken of by BELT, and quoted by Mr. Morris in his work on British Honduras, did not come under our observation, but I saw some prepared food which had been made in an entirely different manner, and on enquiry among the Indians themselves by aid of an interpreter, I learnt that this method of preparation was in general use among the Indians of the district. The method appeared to be, to simply bruise the maize—without any previous boiling to remove the skin of the grain as described by Belt—and then to tie it up tightly in the leaves of the "Waaha" and boil it until it becomes a solid and somewhat glutinous mass, which is then carried with them on their journeys, and is eaten cold, or warmed up by another slight boiling. It is therefore probable, that the Mexican method of preparing the grain into cakes called tortillas, though stated by BELT to be common to Central America, did not in reality extend so far South as the Province of Veragua; or that a more careless method of preparation has been adopted since the time he wrote, (1874.) The preparation is called "Bouyou" in Spanish and "Saa" in the Indian vernacular. I saw some of it in the hands of the Indians, but to me it did not look particularly inviting, as the outer skin of the grain rendered it to all appearance somewhat chaffy. During the afternoon I had an

* "Geological Observations in South America, 1846," p. 49, and "Animals and Plants under Domestication," vol. 1, p. 320.

† Von Tschudi, "Travels in Peru," English Ed., p. 177.

‡ "The Naturalist in Nicaragua," p. 55.

opportunity of taking a photographic group of these people; but I was sorry to find afterwards that the damp had so affected my dry plates as to render them entirely useless. The process of changing the plates at night which has to be done with the aid of a red lantern, excited considerable curiosity, and it probably left among them an impression which I would rather have avoided giving rise to, but we did our best to combat this through the medium of our interpreters. The remaining part of the day was spent in rambles in the woods in search of specimens, and I gathered sufficient material to keep me fully employed in securing it, for a great part of the evening. Of the work done by my friend in another direction, it is not my province to speak, but I may venture to say that his own special work was entered into with indefatigable zeal and energy, and let us hope, was productive of great good. Not only was he truly zealous in his own work, but his untiring efforts in the endeavour to assist my labours, were of the greatest service and conduced in a great degree to the success of my mission. He aided me to the utmost and many specimens were secured which would otherwise have been passed by, had they not been detected by the vigilant eyes of my companion. Among the specimens here obtained were several species of GRAMINEÆ, and CYPERACEÆ, with some splendid large SELAGINELLAS. Going to bathe in the river alone one evening, I entered the stream near the mission house at a shallow place, and was luxuriating in the delicious coolness of the water, when I suddenly found myself off my feet, and in a second was taken with a surprising swiftness into the middle of a deep whirling eddy; fortunately, I was able to swim, but still it required all my strength to make the shore, which I at length reached in safety after having suffered considerable alarm, from the fact, that such places are the favourite resort of the Alligator, which is common to the river. The bank on which I landed was covered with the SELAGINELLAS, and I found two species, that had it not been for my little CONTRETEMPS, would probably have been overlooked.

On the banks of the river and in the adjoining forests were seen several trees of CASTILLOA ELASTICA, from which is produced the Central American rubber, but they were all young and in consequence, were not bearing seeds. ALL the larger trees have been destroyed by the rubber gatherers, and it is only in localities several days' journey inland that any trees exist of sufficient size to produce rubber in any large quantity. The localities are kept secret by the Spanish and Indian section of the community, so as to prevent encroachment upon what they deem to be their exclusive right to cut and manufacture the article. These people bring down in canoes during the season, large quan-

tities of manufactured rubber, which is bartered for clothing and provisions at the coast settlements. There are two classes of rubber, the flat or cake manufactured rubber, and the scrap rubber, which I was informed is collected when congealed in the incisions made for bleeding the trees at the commencement of the season.

On passing a large branch of the WARI-BIARRI on the way up, I made enquiry as to where it led, and was informed that it had never been successfully explored by any one. On making further enquiries I found that extraordinary stories of the demoniacal things to be seen and met with on this branch were told, and believed in, but on sifting the matter further, I was led to conclude that such things were the mere invention of Indians and Spanish-speaking rubber hunters, who by this means protected a fine ground for the pursuit of their avocation, and I certainly should, had time at my disposal allowed, have made a careful search up this branch of the river.

When the locality in which these trees thrive is compared with the climate and soil of Jamaica, it would appear to be doubtful, if this rubber-producing tree could ever be successfully cultivated on a commercial scale in this Island except in the moist and humid situations, but nevertheless, it should be given, and is well worthy of an exhaustive trial, as the vagaries of plants are of such an arbitrary character, and it is often by this means alone that their capabilities can be discovered.

The night was spent in the Mission House, and we found the climate, though somewhat enervating in consequence of the excessive evaporation, caused by the sun beaming upon the earth so well saturated by the rain of the previous day—"not too bad." The "Baboons" again enlivened the woods with their horrible howling; but exhausted nature gained the battle, and therefore the noise had no serious effect in preventing our slumbers. In the early morning the Indians were moving and the woods again resounded with the cry of its day-feeding inhabitants; among these, the quick ear of the Indian detected the cry of the PENELOPE, and being myself but partially dressed, one of our boat's crew borrowed my gun and with the Indians proceeded to seek out the locality from which the cries had proceeded. They soon returned, bringing with them a male and female bird of this splendid species. Before they were dressed, I took sketches of the head and clutches, &c., and notes on the plumage, which has led to its approximate determination, as the "PENELOPE OR GUAN (Penelope cristata)—This bird resembles both in appearance and manners the Curassows, and seems like them, to be capable, with proper care and attention, of being added to the stock of domesticated poultry. They are about 30 inches in length, the tail

being about 13. Upper parts dusky, black or bronze, glossed about with green and olive; fore part of neck and breast spotted with white; belly and legs, lower part of the back and under tail coverts reddish; cheeks naked and of a purple violet our; bill dusky; on the head a thick ruffled crest which the bird can raise or depress at pleasure. Naked part of the throat scarlet with an extensive fold of depending skin. Their noise is extremely loud, and when any number are collected at the same spot they make the woods resound with their clamorous cries."* The bird when dressed had all the appearance of a fine young turkey and probably weighed from 5 to 6 lbs. or more. The male we had boiled for dinner, and we likened its flavour to something between turkey and pheasant. The female bird was somewhat smaller than this. Remembering the old adage that, "turkey braized was turkey praised," we had it dressed in that manner and put by as a reserve for the homeward journey.

Chapter VI.

Passiflora vitifolia, H. B. K.—Banana Plantations—Cultivation of the Banana and mode of Shipping — Rice — Canes — Soopa — Vanilla — Fodder grasses—"Guanga"—Mainland Cocoanut inferior in flavour to Island growth—Remarks on healthiness of the District—Snakes and Snake cure, &c.—The return Voyage —Use of the Mangrove—Bumping the Bottom—Arrival at Quarters.

We left the Mission on the Friday morning and proceeded to make our way down the river. All the rapids were passed successfully, but not without considerable trouble, as the river which, on our way up, was swollen with the tropical rains of several previous days, had now subsided to its ordinary level. Specimens of a splendid scarlet Passiflora, Passiflora vitifolia, H. B. et K., were seen and collected at a bend of the river where it overhung one of the eddying pools so frequently met with. It is known to the natives as the "Caboona," but as this name is applied indiscriminately to several species, it could not alone be recognised by that appellation. I found several species of this class of plants in different localities, one among them being of special interest as it produced fine large edible fruit, similar in appearance to that of Passiflora laurifolia, L., the *Pome d'Or* of the French West India Islands, but over twice the size. This together with one very much smaller was also known as the "Caboona."

On reaching that portion of our route where the surrounding district consisted of flat alluvial well raised above the river bed, we noted several extensive Banana plantations. These we were

* Treasury of Natural History.

informed were owned by American and German gentlemen connected with the New York fruit trade. We again landed at that belonging to Mr. Riley, an American gentleman, who has been a resident for some years. Here the banana was perfectly at home, and I was informed on reliable authority that from the time of planting to the production of fruit, only some nine or ten months were required, and the plants from their thriving and luxuriant appearance would assist to bear out this statement. They were planted in straight rows some ten to twelve feet apart, and were producing enormous bunches of splendid fruit at the time of our visit. So productive are these plantations becoming on this and other rivers in the locality that large steamers begin to come in regularly to load for the American market, and when it is considered that the depth of water in the Lagoon is sufficient to allow them to come within a distance of an hour, or a hour and a half's journey by canoe, from the ship to the plantation, it will easily be seen what a profitable business it is likely to become in the very near future. As the plantations are situated immediately on the river banks the labour of shipping the cargo is reduced to a minimum, and hands from the various settlements find it a profitable occupation to go down with the steamers to the anchorage at the river's mouth, to assist in the loading. The transit of the fruit from the plantations to the steamers is all performed by large cedar canoes, similar to the one in which we travelled, or in large ones, dug out from the enormous cotton trees.

Rice was growing wild on the river banks and appeared to be of good quality.

Several large cane fields were also seen and canes 15 to 20 feet high were common objects.

We landed about noon at Mr. Riley's dwelling house, and during the preparation of some refreshment we were invited to take a walk along the adjacent property situated on the shores of the Lagoon. Here again we found the "Soopa" was highly esteemed and numerous specimens were under cultivation. Vanilla was also a common plant, as well here, as in the majority of places visited, and though but little fruit was seen, the vines bore traces of the recent abundant crops. It is cured by simply drying it in the sun, the pods being gathered when "full," and before they commence to turn yellow. We brought some home with us, which in aroma, was far preferable to that usually purchased. The pods were not so long as those of the ordinary commercial kind, so that it is probably a different species to that producing the commercial article.

Several ferns were noticed, and the herbage on the beach

consisted principally of the salt-loving sedges, interspersed with ELEUSINE, and STENOTAPHRUM, both good pasture grasses.

Near the house was a large leguminous tree which was here known as the "Gaunga" or "Gauga" but though it bore considerable resemblance to the tree known under the former name in Jamaica, it was not the same. It is a tall, umbrageous tree, with bijugate leaves, and brown, hairy pods, somewhat falcate in outline, and 6-8 in length. These when opened are found to contain a sweet mucilaginous pulp enveloping the seeds, which, when freed from their covering were of a chocolate colour. The pulp much resembles that covering the seeds of Theobroma, and has a pleasant sub-acid taste.

There were also plenty of cocoanut trees, which found a congenial home in the sandy soil of the beach, but on tasting their produce as "water cocoanuts" we found that they were much inferior in flavour to those grown on the Islands in the Lagoon, but their ripe nuts are equal in size and quality, to those grown in other places.

The land near the house consisted principally of swampy alluvial, and, probably in consequence of the recent rains, exhaled an odour anything but pleasant. On putting a question to Mr. Riley as to the healthiness of the locality, we were informed that during a residence of sixteen years he had suffered about two hours' illness only.

The people generally have a great dread of poisonous snakes which led us to make enquiries of our host as to the authenticity of the numerous cases of snake-bite which we had had related to us. He informed us that he always went into the forest without fear of danger, but was careful to provide himself with heavy top boots as a precautionary measure. He says that few persons die from this cause and further enquiries confirmed his statement.

That deadly snakes are present on the Mainland, there can be no doubt, and it is a singular fact that though they exist also on some of the Islands in the Lagoon, other Islands not half a mile distant, are happily free from these venomous reptiles. The most dreaded snake is one known as the "Tommy Goff." The treatment resorted to by Europeans is with Iodine and Ammonia but with the other inhabitants many kinds of bush are used. Among the most commonly reputed cures for snake-bite is a trailing vine known as the "Langua-Vipara" which from a small leaf specimen I had brought me, I believe to be, a species of ARISTOLOCHIA, another is "Guaco" the leaves of MIKANIA GUACO, one of the COMPOSITÆ. Our informant told us that the Indian is much more sensible to terror, than the creole, and his opinion was,

that many more persons die from this cause, or the effects of the nostrums resorted to, than from the pernicious effect of the bite itself. After a stay of some two hours we bid adieu to Mr. Riley with many thanks for his kindness and courtesy, and embarked for our homeward voyage. The wind was light, and consequently the bar at the river mouth was comparatively easy to cross. When we were safely over (the wind being unfavorable) our "Captain" decided to make the mainland, to the southward of "Baboon Cay" and to reach the point aimed at, we had to traverse a stretch of water 25 miles in length. With an unfavourable wind this was no mean task, but we had every confidence in the capacity of our "Captain" and his crew to take us safe to our destination. The canoe headed therefore in the direction indicated, but being "close hauled" she did not make such headway as we should have wished, which resulted in landing us in a shady cove, on a firm sandy beach, near a turtle-fisher's hut which had been built near the margin of the forest. The boatmen were well acquainted with the navigation of the Lagoon and it was decided to await a change of the wind, which they from experience knew would arise from the land, sometime after nightfall. It had taken us from 2.30 to 6.30 p.m. to cross the stretch of water before alluded to, and consequently our commissariat arrangement was for the moment our chief concern, we therefore proceeded to satisfy the wants of the body and here, the PENELOPE, the bird formerly alluded to, came into requisition and we were served with it cold. It was simply delicious, very tender, and more like pheasant than the male bird we had formerly disposed of. It was washed down with a bottle of Ginger Ale, and feeling very happy in the bright moonlight we seated ourselves on a fallen log, and fell into a discussion on the doctrine of Evolution and other polemical subjects which helped to while away the hours. Suddenly before we felt the wind, we had a call from the boat which had anchored some distance out, to make preparations for embarking, and ere we had time to do this, we found that a splendid breeze had sprung up, but being too low down on a lee shore we had to row up to the point before we could again make sail. Once at the point, our progress was rapid, and our course lay for a passage between Pope Island and the Mainland. There was a very rough sea on, but the night was clear and cool, and we proceeded merrily along. As we reached the passage the wind fell off and the oars had once more to be brought into requisition. Through the passage, the Lagoon is studded with numerous small Cays, consisting of mere coral rock covered with mangrove trees. The mention of mangrove trees, here reminds me that I have somewhere seen it mentioned, that these plants appeared to be of little economic value. It was my fortune, however, to notice

a use to which they were put by a creole settler, which to say the least, was very suggestive of the benefit they can be made to produce, by a proper application of their powers of existence.

On an Island in the Lagoon, on the side affected by the most prevalent winds, a settler had a number of cocoanut trees; he found that they were planted too near the water and that in consequence they were becoming undermined, and washed away by the surf. This was at a point opposite to two small Islands or "Cays" covered with mangrove and situated about a stone's throw from the land. He appeared to have conceived the idea that if he could plant a line of mangrove in the shallow water so as to connect the two "Cays" he would prevent the wash affecting his cocoanuts. He had therefore planted several rows of the tree in calm weather, in the shallow water and when we saw them, they were thriving vigorously and promised soon to present an effectual barrier to the wash of the sea waves.

To return to our homeward journey, we again found the wind among the Cays, but very variable. There appeared to be no select passage among these obstacles, and the boat was put at each opening that presented itself as the wind served. One of the crew stood up in the bows and kept a sharp look out for shallow waters, nevertheless, we several times bumped heavily in making the passage between these obstructions. We could hear the grinding of the coral beneath the boat as she touched the bottom, but beyond somewhat alarming us, it did no further injury. After several hours of this kind of progress I became so hardened to these occurrences that I sank into sleep, and was only awakened as day was breaking, by the stoppage of the boat at "Palmer's" boat building establishment at the southern end of Providence Island. Here we landed for a short time, but although invited, did not stay to take "early coffee." We therefore proceeded to make our way up the Lagoon, but here the wind again was dead ahead, and we had to beat up against it. We reached our quarters, however, at about 9 a.m., after spending some 26 hours in an open canoe on, not the safest of waters.

Chapter VII.

Visit to Nancy's Cay—"Poke-under-boy"—Samba Gum, probable source of—Alsophila blechnoides—"Bogues Mouth"—Naseberries (Achras sapota)—Shark Stories—Indian figures—"Eye-stones"—Fear of Snakes—Work of Land Crabs—Crossing the Bull's Mouth at Night—"Bocatora"—Independence Day—Fire arms—Cricket—Value of Local Currency.

The following day or two was devoted to the drying of the specimens already procured, but having fairly recovered from the fatigue of our late journey, we were invited early one morning to "take a walk." This must not be understood literally, for "taking

a walk" consists in taking a paddle in a canoe, probably for some miles. We accepted the invitation, however, and we found that our guides intended to show us the provision grounds, &c., situated on "Nancy's Cay," named in the chart "Solarte Cay." Here almost as soon as we landed we came upon thickets of BACTRIS HORRIDA, the "Poke-and-dough boy" or "Poke-under-boy," of the colonists. This name appears to extend for some considerable distance in Central America, but its origin is involved in no little doubt. From the use to which the plant is put, in the district we traversed, it would appear to be pretty certain—that to that use—it owes its derivation. The stems of the palm are strong, hard, and some 12 to 15 feet in length, and about one inch, to one and a half inches in diameter, and are the favourite rods used for propelling canoes when in shallow water, hence—"poke-under-boy"—the rods being used in a similar manner to the punt pole of English rivers.

Specimens of these rods were kindly forwarded for me by D. Morris, Esq., late Director of the Department of Public Gardens and Plantations, to W. Thistleton Dyer, Esq., C.M.G., now Director of Kew Gardens. This gentleman was kind enough to place them in the hands of English manufacturers, who have most favourably reported on them, for use in the walking stick and umbrella trades, and further enquiry is now being made at the various sources from whence the supply can be obtained as to the supply available, and the cost of production.

Here we met with another GEONOMA, a small but handsome palm, very similar to those we saw on the Wari-Biarra.

We also procured seeds of the "Samba Gum" tree. These were about the size of small nutmegs, and like them, were covered with a reddish arillus, or fleshy covering, much resembling the mace of commerce. The "Samba Gum" when first produced from the tree, is a yellowish creamy-looking liquid, which after a time becomes hard and somewhat resinous, and when in that condition resembles the "Hog Gum" of Jamaica, the produce of SYMPHONIA GLOBULIFERA, L., FIL, if indeed, it is not the produce of the same tree, for it has not yet been our fortune to obtain seeds and Botanical specimens of the Jamaica plant. And flowers and fruit were not obtainable where the gum and seeds were obtained.

There were several tree ferns, and Selaginellas, but the most curious, was the singular climbing ALSOPHILA BLECHNOIDES, this was present in large quantities. In the single frond, it very much resembles OLEANRA NODOSA, PRL. of the Jamaica fern flora, but the distinction is, however, very apparent, upon closer examination. We also gathered RYANIA SPECIOSA V. belonging

to a genus closely allied to the PASSIFLOREÆ, and a curious Anonaceus plant, probably a Xylopia which exhales a perfume very similar to the allied CANAGA ODORATA, which gives the name to the celebrated "CANAGA WATER" sold by perfumers. Here was also found the new Tree Fern named by Mr. Baker. *Hemitelia Hartii, Bak.*

A day or two afterwards we bent our way, by canoe of course, to the settlement of "Boques Mouth," formerly mentioned as the local name of what is known to navigators as Bocas-del-Drago, or Mouth of the Dragon. This settlement consisted of a few houses only, but its thriving condition will be indicated when it is mentioned that at the time of our visit a Chapel was in course of erection capable of seating over 200 people, and that, without any extraneous help. The building placed on piles near the shore was being very neatly built with American pitch pine, and the workmanship would compare very favourably with similar erections in Jamaica, in fact, I found a Jamaica carpenter engaged in the work. The weather here again proved very unfavourable for Botanical work, but we managed to get out a little at times, and added some novelties to the collections. We noticed on the sea beach an enormous tree of ACHRAS SAPOTA, the "Sapadilla" or "Zapatilla" locally, but the "Naseberry" of Jamaica, which was laden with fruit of very large size. Sea Grapes and Mangroves abounded in the more swampy districts immediately on the beach, but the inner lands were dry, and were producing vegetation of the general tropical character before described. During our stay here we heard some wondrous shark stories. They were such as I had never before heard, or even read of, and it so excited our curiosity, that we afterwards endeavoured to test what amount of truth they contained by introducing the subject apparently in an inadvertent manner, in the several districts we afterwards visited. But there was no apparent contradiction in any of the several stories heard; they all agreed in the most important particulars, and were lastly confirmed by the Captain of a trading schooner who could not possibly know what we had previously been told, and therefore, if I give his description it will suffice for all. He told us, that when sailing his schooner on the Bluefields Coast, that on a calm clear day in a smooth sea, he was seated in the afterpart of his vessel, when he saw over the side, what at first appeared to be a shoal; in consequence he started up for the purpose of altering his course, when the object was discovered to be an enormous shark. The schooner was over 40 feet in length and he declared to us, that the shark was of equal dimensions. It came alongside, rubbing itself against the side of the schooner for several minutes. He said to us, that it struck him that he could kill it with a magazine rifle he had on board, but on second

thoughts, he decided not to trouble the gentleman, as it might injure his schooner. In a short time afterwards it gradually disappeared as quietly as it had come, and to his great joy, was seen no more. We expressed some surprise at the enormous dimensions of the brute, which resulted in his calling aft the mate of the schooner, when he asked him the following leading question: "George, what size was that shark's jaw you saw cut up at Bluefields?" "Well, sir," says he, "it was a big 'un, and I seed 'em put it over four men standing upright without touching 'em." From this and the other stories, it would appear to be almost certain that sharks of a large size abound on the coast, and are at times rather troublesome neighbours. The season of the year they are most frequent is at the time that the Hawk's-bill turtle abound. The flesh of this reptile is not used for food by the turtle-fishers, and their carcasses are, when stripped of the shell, thrown into the sea, and it is this carrion that probably attrac the sharks at one particular season.

Seeing a small figure in one of the houses we visited which was shaped like a toad, we asked where it had been obtained, and were told that it had been found in the woods adjoining the settlement. It was made of baked clay and though very rudely made fairly resembled a toad in its various proportions. We also heard that articles of earthenware of this class were frequently found and sometimes articles of gold also. But none of the latter were produced.

Among the people here in constant requisition was what are called "Eye-stones." They appear to be the operculum of some small mollusc, and are used for removing specks of dirt or other objects from the eye. They are nearly flat on one side with a slightly spiral line decreasing to the centre, and on the other boldly convex. They vary in size from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch in diameter. They are placed beneath the eyelid, and worked backwards and forwards until the object is removed, which I proved by experiment could be done without pain or inconvenience.

Leaving Boques Mouth, we came down the Lagoon to the "haul over" near Bocas-del-Tora on Columbus Island, here we left our boatmen, and made our way on foot to the homestead of Pedro Lopez, Esq., one of the principal residents, to pay him a visit. We were very courteously received, and after an inspection of his cane mills, and a drink of cane juice, we went up to the house, and were introduced to the ladies of the family. After some refreshment we proceeded on a visit of inspection to the Cane and Banana fields, and afterwards for a stroll through the bush. Columbus Island being noted for its poisonous snakes we asked our host whether there was any danger of coming across

any of these reptiles. "Not much," said he, "I have no fear," but at the same time, we noticed that he took good care, that one of his Indians walked in front of him with a long "Cuban cutlass" (here called Collin's cutlass, from the maker's name) making at the same time a great noise by hitting the bushes as we walked along.

We collected many specimens in the woods, the most interesting being a Pteris, a Trichomanes of very minute proportions, and an Alchornea. This latter was growing in a pasture at sea level, and appeared to be the same species which is indigenous to the Jamaica hills, but is never found on the plains of this Island. This instance has a parallel, in the plants found by Mr. Morris growing on the sea shore in British Honduras, which in Jamaica are only to be found in the highest mountains. The fact has not been explained, but it is probable, that were a careful search made into the microscopical structure of these plants it would be found that their cells are constructed, so as to render them more dependent upon a regular supply of moisture, than upon a higher or lower degree of temperature. The humid character of the atmosphere is nearly constant in the localities in which these plants are found and the rainfall in the two places, is believed to be nearly equal, in annual average.

The Banana Plantations on this gentleman's property were examples of good cultivation. The ground selected for their growth, consisted principally of a stiff yellow clay covered with black alluvial, intermixed with innumerable sea shells, and through which, the land crabs are ever bringing up the subsoil to the surface, thus raising it gradually, higher and higher above sea level.

After a short trip through the woods, we again returned to the house and were entertained at dinner, the good things keeping us so late, that it was almost dark ere we reached the boat house, canoe house I suppose would be the more correct term, however we soon were afloat and two athletic Indians rapidly took us across the bay to Bocas-del-Tora. Here we were furnished with a canoe by Mr. Robinson Lopez, the brother of our late host, who had accompanied us and we were soon speeding homewards towards "Old Bank." The Bull's Mouth is not the best of places to pass in a dark night, and at the time we crossed, the waves were running very high, and we sank and rose alternately some 10 or 15 feet at a jump, but our canoe seemed a thing of life, and our boatmen as unconcerned as if they were on shore. After some twenty minutes of this style of progression, we found ourselves safely once more on *terra firma*, but although the confi-

dence of the boatmen tended to give us considerable nerve, we felt much safer on shore than in crossing the boiling cauldron of the Bull's Mouth, and we were very thankful to have succeeded in crossing without mishap.

Next day we again went on a visit to "Solarte Cay" and discovered a very handsome dwarf palm known locally as the "Kiss-Kiss." It has a small stem 2-3 inches in diameter and somewhat in appearance like a sugar cane. It has pinnate leaves finely cut at the base, and abruptly terminated at the apex. It has a large spreading panicle, which before expanding is enclosed in a short, smooth, boat shaped spathe. Here we found several ADIANTUM's, a PTERIS and another TRICHOMANES, and procured seeds of the small swallow tail palm seen on our last visit.

Next day we crossed to the town of Bocas-del-Tora, locally "Bocotora," with the intention of paying a visit to Senor Pardou, the "Political Judge" or person in authority for the district. On our arrival we found the town in holiday rig, on account of its being Independence day for the State of Panama. There were processions of various classes in which the negro appeared to be allowed to hob-nob freely with the citizens of higher grade. Everything appeared to be conducted with utmost good temper and politeness, but the frequent pop of the revolver and rifle was not a reassuring feature, but we were assured that it was only on such occasions as these, that the people were allowed to carry and discharge fire arms in the streets, and that in consequence they used the opportunity for practising ball firing, &c.

The members of two Cricket Clubs were parading the streets and the excitement was running high, as to which side would come off the victor. Either side has its special colours, with the monogramic title of its club embroidered on the cap, which, in appearance was similar to those used in England and Jamaica during the game of cricket.

We were politely shown to the house of Senor Pardou by a bystander, and were well received. Although a resident as he informed us, for some forty years, he had not become acquainted with the English language, but the Senorita Pardou spoke fluent English, and was the medium of communication between us. We found that the gentleman was engaged in commercial pursuits, as indeed was nearly everyone in this settlement, or town. It consists of one long wide winding street, covered with grass, well drained on each side by trenches, which carry off the rain water. Not a vehicle of any kind was seen; in fact, they are not required, for the trade and communication from one part to another, is performed by the ever-present canoe. Before leaving

we visited Chas. Fitzgerald, Esq., who is the local agent of the Atlas Company, and from whose conversation we gathered that the trade of the colony had received a considerable impetus, by the increased cultivation of Bananas and Cocoanuts, and that the town was likely to become an extensive and important depôt, in the not distant future.

A great difficulty in the way of trade is the varying character of the local currency. All sorts of coins of the South and Central American Republics are current, and the silver "Peso" or "Sol" has about the same purchasing power as 3/1½d. of English, or the same value of American money.

Chapter VIII.

African Oil Palm—Granadilla—Bromelia pita—Breadfruit—Cassava—Tobacco—Limes—Oranges—"Aekee"—Green-skinned Cocoanut—Sloth—Smooth Cayenne Pine—Climate of the Interior—Suitability for Cinchona—Tea, Coffee, &c.—Land Tenure—On the start for Home—Delays—Wreck of Schooners—The Maggie B.—Colon—Disgusting state of the Streets—Advice to those about to go there—Home in the Belize S. S.—List of Plants found—Professor Dyer's courtesy.

The remaining days of our visit were spent mostly indoors on account of the very inclement weather which prevailed at the time, but even during this time I was fully occupied in drying and properly preserving the specimens I had already secured. Though too unfavourable for ourselves to seek the woods, we had the willing aid of the inhabitants who brought to us every bit of flowering "bush" which they found in their journeys to and fro, from their provision grounds. One of the specimens thus brought to us was the fruit of a Passiflora, called the "Wild Granadilla" locally. It was a ripe fruit one inch in diameter, bright scarlet in colour, having a very thin papery pericarp with light coloured transverse and longitudinal markings. It contained a very pleasant, sweet pulp, and being fully ripe, seeds were duly secured and I am glad to say safely transported to this Island, where they are now growing freely. It is a pretty species, and was found on a small Island called "Careening Cay" forming the tongue of the Bull's Mouth. Another plant of interest of which seed was brought us was Elais Guineensis, or the African Oil Palm, which has probably been introduced into these islands, in a similar manner as it was into Jamaica, (viz.,) brought by emigrants? from the Coast of Western Africa. We also had a fruit of the true Passiflora quaaranqularis brought to us, under the name of "Granadilla." I had not seen the fruit of this plant for some twenty years, but it has often occurred to me that the name Granadilla was probably applied indiscriminately to the two kinds, *i.e.*, Passiflora macrocarpa and Passiflora quadrangularis—the former of which is known and grown in Jamaica, as the "Granadilla." The difference between the two varieties is

not so much in the size and shape of the leaves, which are very similar, but in the different form, size and flavour of the fruit. The fruit of P. QUADRANGULARIS is in size about one-third less than that of P. MACROCARPA, more oval in shape and of a darker green colour, and it is much superior to the ordinary fruit known as the "Granadilla." The two species are not accepted as distinct by Grisebach and other botanists. The fruit of BROMELIA PITA, was also brought to us. This is the "Silk Grass" of the district, and is the plant from which all the Indian hammocks, bags, &c., are manufactured. It has leaves sometimes over 10 feet in length, in appearance not unlike those of the "Penguin" of Jamaica, but the fruit of the plant is much more like the pine apple, as it rises on a stem 3 or 4 feet long from the crown of the plant, and the pips are aggregated together in a similar manner as in that fruit. The bracts are much more distinct, bright scarlet and close together, and the pips are much smaller than those of the pine apple and not of such a succulent nature. It is very handsome, and were it not for the somewhat unweildy proportions of the plant producing it, would be of some interest as an ornamental fruit.

The Breadfruit was a tree we found abundant in all the Islands, and was tended in every place with much care, as it is one of the favourite plants selected by the "We-We" ant for the display of its depredatory powers. It nevertheless thrives well and produces fruit in abundance. "Cassava" as a rule is not so prolific as in some of the drier districts in Jamaica, but it is generally cultivated by both Creoles and Indians. Tobacco is grown, but is of very inferior quality. Limes are plentiful, but Oranges are scarce, rendered so, by the constant attacks of the "We-We" upon the leaves of the tree.

The Star Apple was fairly common and several trees of BLIGHIA SAPIDA, the "Ackee," were in cultivation near the settlements.

There is a variety of Cocoa-nut grown here that is deserving of special mention. It is called the "green skinned," and though in outward appearance it is often smaller than the ordinary kind, it is found that when denuded of its husk, the nut is very much superior in size. It is apparently quite as prolific, the trees are as quick in growth, and quite as hardy as the ordinary variety. The nut when ripe is about one-third larger and much handsomer than the common one. As "water cocoa-nuts" they contain a very large quantity of liquid, one we had given us produced sufficient to fill a soda-water tumbler $1\frac{1}{2}$ times, and we were informed was not selected for its extra size. It would be well for those who intend cultivating the Cocoa-nut in Jamaica,

if they were to seek a supply of this special kind, as without any doubt it is very much more valuable than the common variety, and would command a much higher price in the various markets. It is believed that plants of this kind producing fruit, are now growing in Jamaica, and it is worthy of enquiry whether any facts are known as to its suitability for the Jamaica climate.

A destructive animal in the provision grounds is the "Sloth," which is fairly numerous. It is a disgusting looking creature, specially adapted in form for living in the branches of trees, &c. It is to be seen occasionally at mid-day perched upon the top of a bunch of Bananas or Plantains leisurely eating them without any apparent regard to external objects, never leaving the bunch until it is entirely consumed.

Pine Apples of the several commoner kinds are in cultivation on the provision grounds, but just as we were leaving, we were presented with two enormous fruits of a superior variety. I immediately recognized this as being the tree "Smooth Cayenne" a variety which I have not as yet seen in Jamaica. Enquiring into the history of its introduction into the Islands, we were told that the plants were introduced from Jamaica. It is one of the best varieties that can be grown and is highly esteemed even when produced under artificial cultivation in English hot-houses. If to be found in Jamaica, it is strange it should not have made its appearance among the numerous varieties shown at the Kingston Horticultural Show, and that body would do well to offer a special prize for its production, in the hope of calling increased attention to the cultivation of another valuable variety of this delicious fruit.

I cannot take leave of this country without mentioning the immense tracts of land on the interior mountains which without a doubt possess a climate somewhat similar to the Jamaica hills. Hence it follows that there is plenty of room for the cultivation of such products as Cinchona, Coffee, Tea, &c., &c., while the coast districts are suitable for the growth of nearly all kinds of tropical products, &c. Cacao, is at home in the tracts near the coast, and produces a much finer bean naturally, than can be exhibited by many other countries which expend a large amount of capital and labour in its production.

The great drawback to the development of the country is the insecurity of the land tenure. We heard of instances in which, what is called a "forced loan" had been exacted from individuals (presumeably by the Government), in cases where the person had become obnoxious to the opposite political party. The taxes, and imposts, &c., appear to be regulated by no fixed law, but left

to arbitrary settlement of the party in power, from which there appears to be but little chance of obtaining justice on appeal, unless supported by that most substantial argument of modern days, viz: plenty of money.

We had made arrangements to return to Jamaica by way of Colon, but a "Norther" having set in with considerable force it resulted in wrecking the schooner on her way from Colon, that was engaged to take us to that port. Other arrangements had therefore to be made and another small schooner was engaged, our traps put on board, and we prepared to start. Several little unaccountable delays took place, however, and while we were thus waiting, another "Norther" set in, when unanimously the people declared "minister" could not go in that boat, as she was not sufficiently sea worthy to stand any rough weather.* Our traps in consequence were again brought ashore, and we had to await another opportunity. During the gale, however, a schooner ran in for shelter, and anchored off Bocas-del-Tora. She proved to be the "Maggie B." a trader between Port Limon and the Ishtmus. The Captain to escape the gale had run in for shelter and to fill up with provisions for sale in Colon. We engaged a passage in her and the storm having subsided, we set sail.

The wind which for several days previously had been almost a hurricane now subsided, to nearly a dead calm. The current was running, we were told, some three miles an hour and was in our favour, so that we progressed leisurely, with sails flapping idly except for the few "cats' paws" that now and then struck them. As we neared Colon, however, a breeze sprang up and we ran in to the anchorage without any trouble. Here we took our leave of the "Maggie B." She was a tight little schooner with a low freeboard, fine lines and tall raking masts, and considered the finest sailer on the coast. Her Captain was a Norwegian and was owner of the vessel, which though now a trader had formerly rejoiced in the title of yacht. As a rule it is only "great men" who are able to keep a yacht, but in the case of the "Maggie B." it was otherwise, as it was for one of the smallest men that ever lived that this vessel was designed and built, and he no less a personage than GENERAL TOM THUMB.

We landed in Colon in a pelting shower and had the misfortune for the first two or three days, to meet a continuance of the same weather. I had heard much of Colon, but I never expected to see anything so bad as the state of affairs we found existing. It was not possible to cross the streets, without the help of the numerous old packing cases, planks, &c., that were lying in every direc-

* She was lost at sea with all hands on her return trip to Colon.

tion. The streets were the receptacle for every description of rubbish, and the rain had reduced them into rivers of liquid mud, into which the drivers of drays, &c., were compelled to plunge, to enable them to pass along, as the railway track in the centre of the street did not permit of their crossing only at certain points. In many places the streets were, for often as much as a hundred yards in length, from two or three feet deep in mud, and I frequently saw mules in drays sunk up to their shoulders, in this abominable filth. It rained at intervals during the nights and immediately after a downpour, the smell arising from the disturbed surface of the saturated ground, and the numerous mud pools, was very hard to put up with, but nevertheless it had to be borne, as we had to wait for six days to get a ship to Jamaica.

The Royal Mail steamer "Belize" then made her appearance, and we engaged a passage in her, nothing loth to leave this pestilential hole and return to our home in Jamaica. Punch's advice to those about to marry, is equally applicable to those who are about goingto Colon, "Don't."

A short voyage landed us in Kingston on a Saturday evening after an absence of six weeks. The subjoined lists giving the results of our journey in a strictly Botanical sense, the plants having all been accurately determined by the Staff of the Royal Herbarium, Kew, through the kindness of Professor Dyer, C.M.G., Director of the Royal Gardens, who is always ready to extend his sympathy and assistance to all interested in the progress of Botanical Science.

J. H. HART.

Plants collected in Chiriqui Lagoon and Neighbourhood.

BY J. H. HART.

Ferns & Lycopods.

17 Alsophila blechnoides, Hook
46 A——elongata, Hook.
29 Hemitelia multiflora, R.B.
43 **Hemitelia Hartii, Bak. N. sp.**
63 Trichomanes punctatum,
41 T——muscoides, var. angustifions. Fee.
1 T——elegans, Rudge.
38 T——sinuosum, Rich.
T——macilentum, V.D.B.
15.39 Adiantum intermedium, Sw.
26 A——tetraphyllum Willd.
36 A——obtusum, Desv.
52 Hypolepis repens, Presl.
42 Asplenium cultrifolium. L.
51 Nephrodium molle, Desv.
14 N——cicutarium, Bak. pilose variety.
62 Polypodium crasifolium, Sw
56 P——crenatum Sw.
55 P——tetragonum, Sw.
54 P——incanum, Sw.
22 P——piloselloides, L.
3 P——percussum, Car.
7 Gymnogramme gracilis Heward ?
45 Acrostichum sorbifolium; L; var. yapurense, Mart.
53 Acrostichum osmundaceum. Hook.
32 Lygodium digitatum, Eaton
59 Lycopodium linifolium, L.
11 Selaginella erythropus, Spring.
2a S——flabellata, Spring
2.33 S——geniculata, Spring
61 S——anceps, A Br.
22a:37 S——radiata, Baker
26a:27 } S——eurynota, A Br.
27a: }

Flowering Plants.

134 Tetracera sp.
96 Herrania sp.
135 Pavonia Typhalea, Car.
151 Theobroma bicolor, H.B.K.

Flowering Plants.

132 Ryania speciosa, Vahl.
108 Erythrina, sp.
177 Desmodium near Barclayi, Bth.
99 Lonchocarpus sericeus, H.B.K.
103 Lonchocarpus ?
182 Dalbergia Amerimnum, Benth.
112 Passiflora laurifolia, L ?
140 P——vitifolia H.B.K.
104 P——sp.
121 Terminalia (Bucida) Buceras. L.
174 Calia prunifolia, H.B.K.
176 Cosmos caudatus, H.B.K.
138 Mikania sp. "Guaco."
131 Genipa Americana, L. "Indian Ink."
109 Rustia occidentalis, Hemsl.
119 Psychotria, sp.
144 Sabicea, sp.
113 Gonzalia spicata D.C.
110 Terminalia "Wine wood."
129 Posoqueria Panamensis, Walp.
114 Cordia ulmifolia, Juss.
120 Solanum leucocarpon, Rich ?
136 Ardisia=Seeman 59.
127 A——sp.
153 Chrysophyllum glabrum, Jacq.
115 Macfadyena uncinata, D.C.
117 Citharexylum caudatum, L.
98 Rhabdadenia biflora, Jacq.
128 Prestonia, sp.
166 Ocymum basilicum, L.
175 Scoparia Dulcis, L.
167 Stemodia
105 Lippia nodiflora, Rich.,
142 Columnea, sp.
130 Aphelandra, Sinclairiana, Nees.
186 Belophorone carthaginensis Jacq.
106 Thevetia nitida, D.C.
168 Pisonia, sp.
137 Philoxerus vermiculatus, R.Br.
141 Nectandra villosa, Nees.
124 Piper (Stiffensia) sp.
126 P——auritum H.B.K.
97 Croton cfr. Eluteria, Sw.

Plants collected in Chiriqui Lagoon, (continued.)

125 C——maritimus, Walt.
140 Castilloa elastica, Cerv.
100 Pinus cfr. cubensis, Grisb .
122 Alchornea, sp.
95 Aristolochia cfr. glandulosa
179 Zamia Skinneri, Warsc, (male)
178 Epidendrum stenopetalum, Hook.
172 E——near nocturnum
145 E——near rigidum
133 E——near rigidum, (Sw.)
184, 102 } Orchids not in flowers
111 Brassavola nodosa, Lindl.
173 Æchmea (Platyæchmea) Chiriquensis. Baker, N. sp.
101 Carludovica Plumieri, Kunth.
116 Xiphidium floribundum, Sw.

GRASSES & SEDGES.

80 Cyperus Lazulæ, Rottb.
75 C——Compressus L.
70 Dichronema pubera, Pahl.
68 Fimbristylis polymorpha, Kunth.
79 Kyllinga aphylla, Kunth.
82 K——monocephala, Rottb.
85 Scleria melaleuca, Reich.
71 Orthoclada laxa, P.B.
77 Pharus brasiliensis, Raddi
83 Oplismenus loliaceus.Spreng
74 O——Burmanni, P.B.
91 Eragrostis sp.
93 Eleusine indica, Gærtn
67, 76 } Leptochloa virgata, P.B.
183 Stenotaphrum americanum, Schrad.
66 Chloris radiata, Sw.
69, 72, 89 } Ichnanthus, pallens, P.B.
84 Panicum near maximum, Jacq.
64 P——sp.
87 P——trichanthum, Nees.
78 P——fuscum, Sw.
94 P——barbinode, Trin.
73, 86 } P——tenuiculmum Meyer
02 Paspalum pusillum, Vent.
65, 88 } P——paniculatum, L.
189 P——setaceum, Michx.
81 P——conjunatum, Berg.

PALMS.*

148 Bactris Sp.
4 Geonoma Sp.
5 " "
8 " "
9 " "
171 " "
Acanthoriza aculeata
Chamædorea, sp.

Plants collected in the Island of San Andreas.

164 Malvastrum tricuspidatum, A.Gr.
161 Rhynchosia minima, D C.
160 Desmodium incanum, D.C.
159 Cassia Tora, L.
147, 154 } Casearia ramiflora, Vahl.
157 Cuphea epilobiifolia, Kœhne
164 Hamelia patens, Jacq.
149 Alibertia edulis, Rich.
169 Tabernœmontana citrifolia, Jacq.
151 Tournefortia gnaphalioides, R. Br.
150 Dichondra repens, Forst.
162 Echites umbellata, L.
170 Bunchosia Swartziana, Griseb. ?
148 Avicennia nitida, Jacq.
146, 155, 163 } Capraria biflora, L.
152 Brassavola grandiflora, Lindl.
90 Digitaria marginata, Link.

Most of these are now growing in Jamaica and will be determined later on when sufficiently advanced.

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